Module 4

Data Management

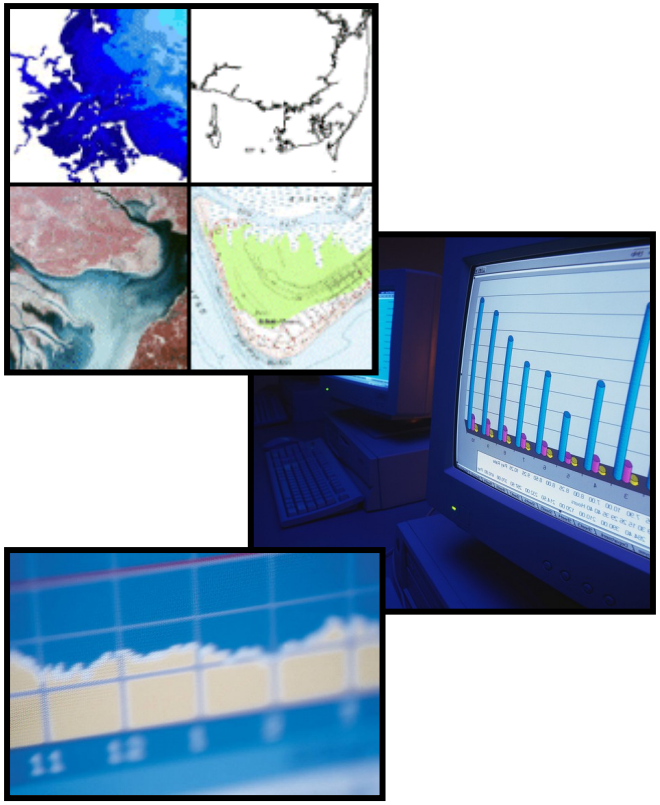
Module Overview

1. Introduction: What is eCoastal?
2. Exercise A: Browsing the Geodatabase
3. Lecture: Importance of Spatial Data Standards
4. Exercise B: Using the SDS Feature Browser
5. Exercise C: Importing Data into the SDS Geodatabase

Introduction: What is eCoastal?

- **Enterprise GIS** is defined as *the integration of geospatial technology infrastructure to deliver spatial information products, services and standard datasets to all business elements and processes of the organization.*

- The concept of enterprise GIS (eGIS) is taking a complete organizational approach to sharing, using, and managing spatial information.



What is eCoastal?, cont.

- **eCoastal** is an enterprise GIS developed for coastal engineering business practices. It was developed to concentrate on the specific needs of the coastal engineer.

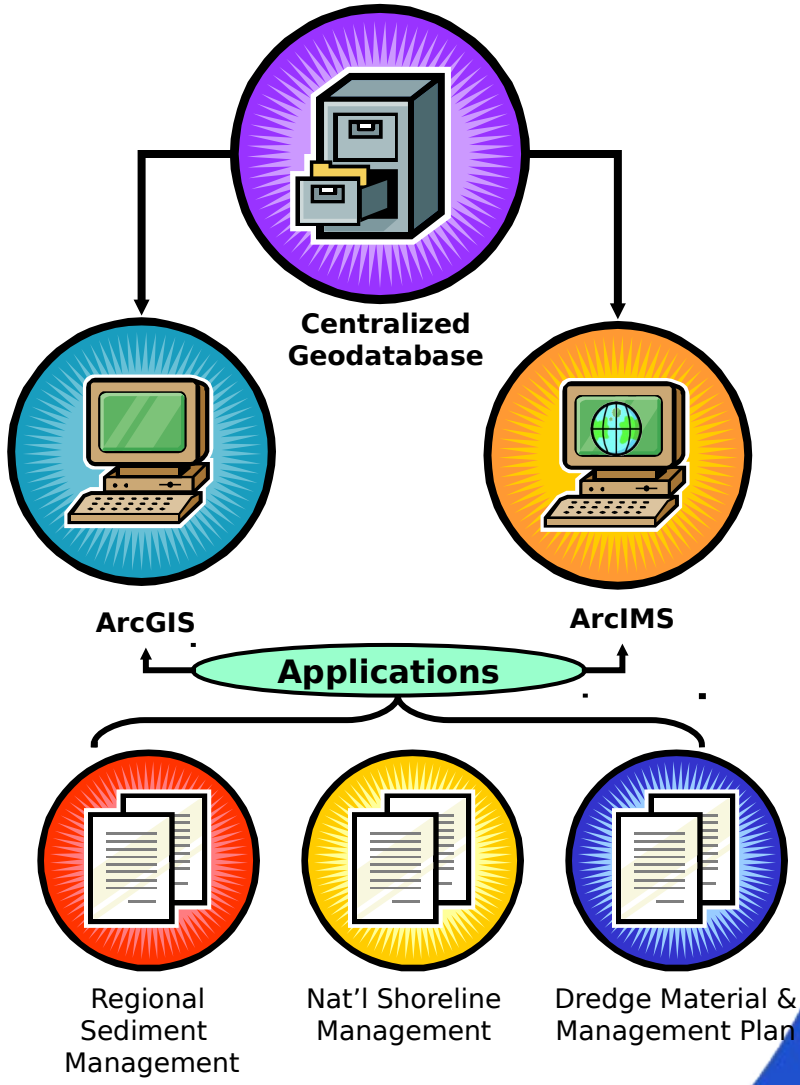
- eCoastal is an architecture developed by the U.S. Army Corps of Engineers that addresses spatial data standards (SDS), geodatabase development, and desktop and web applications.

- This architecture allows adjacent coastal projects to effectively share and access data contained in the system.

Architecture Overview

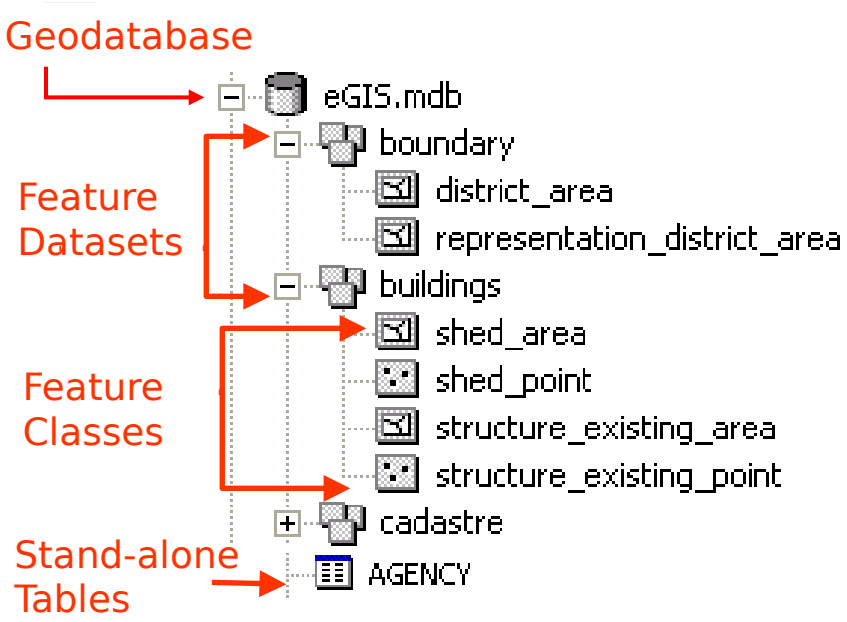
- The centralized geodatabase serves as the data repository for all spatial data accessed by the enterprise GIS applications.

- Data collected or created for all coastal projects are imported into the geodatabase. Only one geodatabase exists to serve data to the public, via the Internet accessible interface, and to support the internal applications.



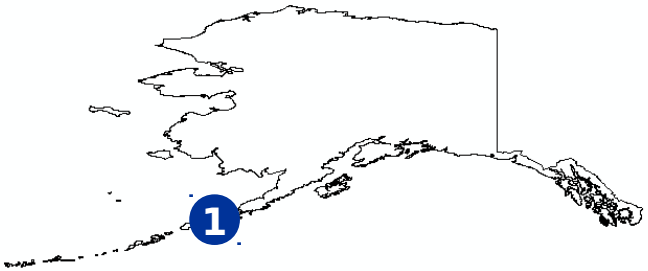
Data Storage

- A Geodatabase is a proprietary (ESRI/ArcGIS) storage format that represents geographic features and attributes as objects and is hosted inside a relational database management system. It is organized into a variety of feature datasets and sub-divided into feature classes, as defined by the ***Spatial Data Standard***.

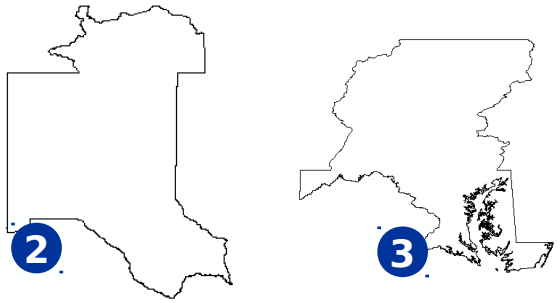


Data Storage

- Feature classes are a collection of geographic features with the same geometry type (such as point, line, polygon), the same attributes, and the same spatial reference.



- Using Spatial Data Standards, all features representing the same data type, such as Survey points, are stored within the same feature class. Attribution of the data record identifies the survey details, such as collection date or name.



	OBJECTID*	SHAPE*	SUBTYPEID	distct_id	map_i	met	me	coor	dis_typ_d	dist_name	dist_num
▶	1	Polygon Z								Alaska	
	2	Polygon Z								Albuquerque	
	3	Polygon Z								Baltimore	

1
2
3

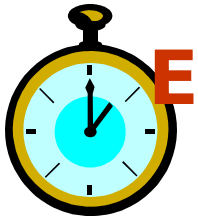
Mobile District eCoastal Demo

Inside look at the enterprise geodatabase, structure and ArcIMS

Exercise A: Browsing the GDB

What to Expect:

The geodatabase stores all of the geospatial data contained in eCoastal. Though custom applications have been designed to allow browsing of the geodatabase, this exercise will take a look at the geodatabase blueprint for the eCoastal system.



Estimated Length: 10 Minutes

Spatial Data Standards

- The Spatial Data Standard for Facilities, Infrastructure, and Environment (SDSFIE) provides a standardized grouping of geographically referenced (i.e., geospatial) features.

- Each geospatial feature has an "attached" attribute table containing pertinent data about the geospatial feature.

- SDS represents an organization of data without regard to application. The assignment of specific entities to entity sets is a function of data maintenance rather than data use. In this way, it is possible to reduce redundancy of information within the standard.

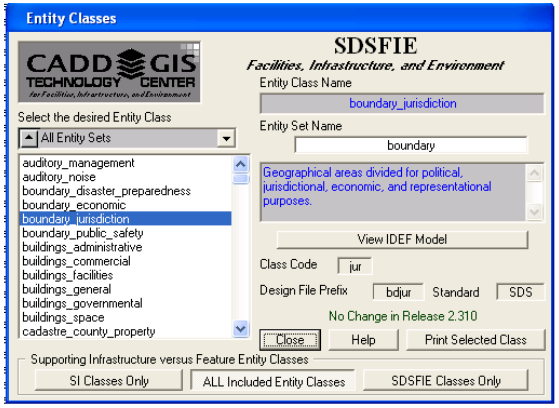
- This schema meets data sharing requirements of the National Spatial Data Infrastructure (NSDI)

Spatial Data Standards

- Standard GIS and FM Data Collection Requirements
- One Training Program
- Common GIS and FM Software Applications
- Standard Implementation Procedures and Requirements
- Common Data Model which Permits the Sharing of Data
- Nonproprietary Data Model (SDSFIE & NCITS 353)

Spatial Data Standards

- The USACE eGIS program desired a standardized Geodatabase to
  - Allow custom GIS applications could be built upon a common framework.
  - Allow easy distribution of applications with little to no reprogramming.
  - Allow easy data sharing across various Corps Districts and the public.
  - Have an easy and cost effective way for distribution to other Districts.



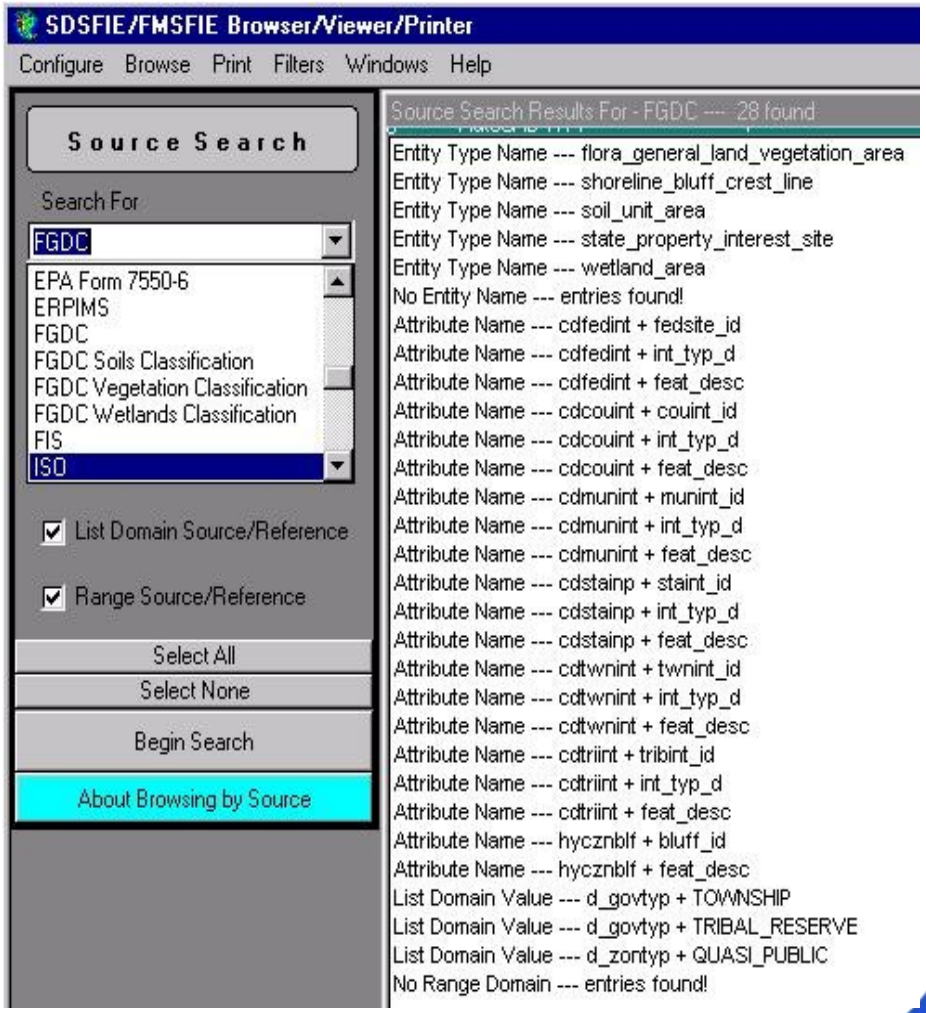
Spatial Data Standards

- Spatial Data Standards define the nomenclature of the feature datasets, feature classes, and attribution of all features stored within the geodatabase.

- This standardization allows the data and custom applications,
  - that interface directly with datasets,
  - to be easily shared among other districts or
  - with those agencies using Spatial Data Standards.

Spatial Data Standards

- The SDSFIE provides a GIS Implementation Schema for Approved Federal Geographic Data Committee (FGDC) Data Standards.
- Approved FGDC Soils, Vegetation, Wetlands, & Cadastral Classification Standards were incorporated in the SDSFIE.


SDSFIE/FMSFIE Browser/Viewer/Printer
Configure
Browse
Print
Filters
Windows
Help
Source Search
Search For
FGDC
EPA Form 7550-6
ERPIMS
FGDC
FGDC Soils Classification
FGDC Vegetation Classification
FGDC Wetlands Classification
FIS
ISO
List Domain Source/Reference
Range Source/Reference
Select All
Select None
Begin Search
About Browsing by Source
Source Search Results For - FGDC --- 28 found
Entity Type Name --- flora_general_land_vegetation_area
Entity Type Name --- shoreline_bluff_crest_line
Entity Type Name --- soil_unit_area
Entity Type Name --- state_property_interest_site
Entity Type Name --- wetland_area
No Entity Name --- entries found!
Attribute Name --- cdfedint + fedsite_id
Attribute Name --- cdfedint + int_typ_d
Attribute Name --- cdfedint + feat_desc
Attribute Name --- cdcouint + couint_id
Attribute Name --- cdcouint + int_typ_d
Attribute Name --- cdcouint + feat_desc
Attribute Name --- cdmunint + munint_id
Attribute Name --- cdmunint + int_typ_d
Attribute Name --- cdmunint + feat_desc
Attribute Name --- cdstainp + staint_id
Attribute Name --- cdstainp + int_typ_d
Attribute Name --- cdstainp + feat_desc
Attribute Name --- cdtwnint + twnint_id
Attribute Name --- cdtwnint + int_typ_d
Attribute Name --- cdtwnint + feat_desc
Attribute Name --- cdtriint + tribint_id
Attribute Name --- cdtriint + int_typ_d
Attribute Name --- cdtriint + feat_desc
Attribute Name --- hycznblf + bluff_id
Attribute Name --- hycznblf + feat_desc
List Domain Value --- d_govtyp + TOWNSHIP
List Domain Value --- d_govtyp + TRIBAL_RESERVE
List Domain Value --- d_zontyp + QUASI_PUBLIC
No Range Domain --- entries found!

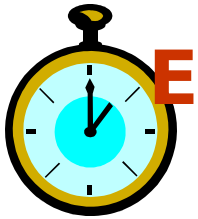
Instructor Demonstration

Using the SDS Feature Browser

Exercise B: Using the SDS Feature Browser

What to Expect:

Prior to data being imported into the geodatabase, the appropriate feature dataset/feature class must be determined. After this exercise the user will be able to search the Spatial Data Standards using the SDS Feature Browser.



Estimated Length: 10 Minutes

Exercise C: Importing Data into the SDS GDB

What to Expect:

Using the correlation matrix for the Shoreline shapefile created in exercise B, you will be able to import the original shapefile into its target feature dataset and feature class. You will also learn how to use attribute identifiers to retain dataset details in a SDS format.

Estimated Length: 15 Minutes